A Game Changer in Freight Transportation in India

Dedicated Freight Corridor Corporation of India Limited (DFCCIL)

24th International Convention of the Working Committee on Railway Technology.

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Content

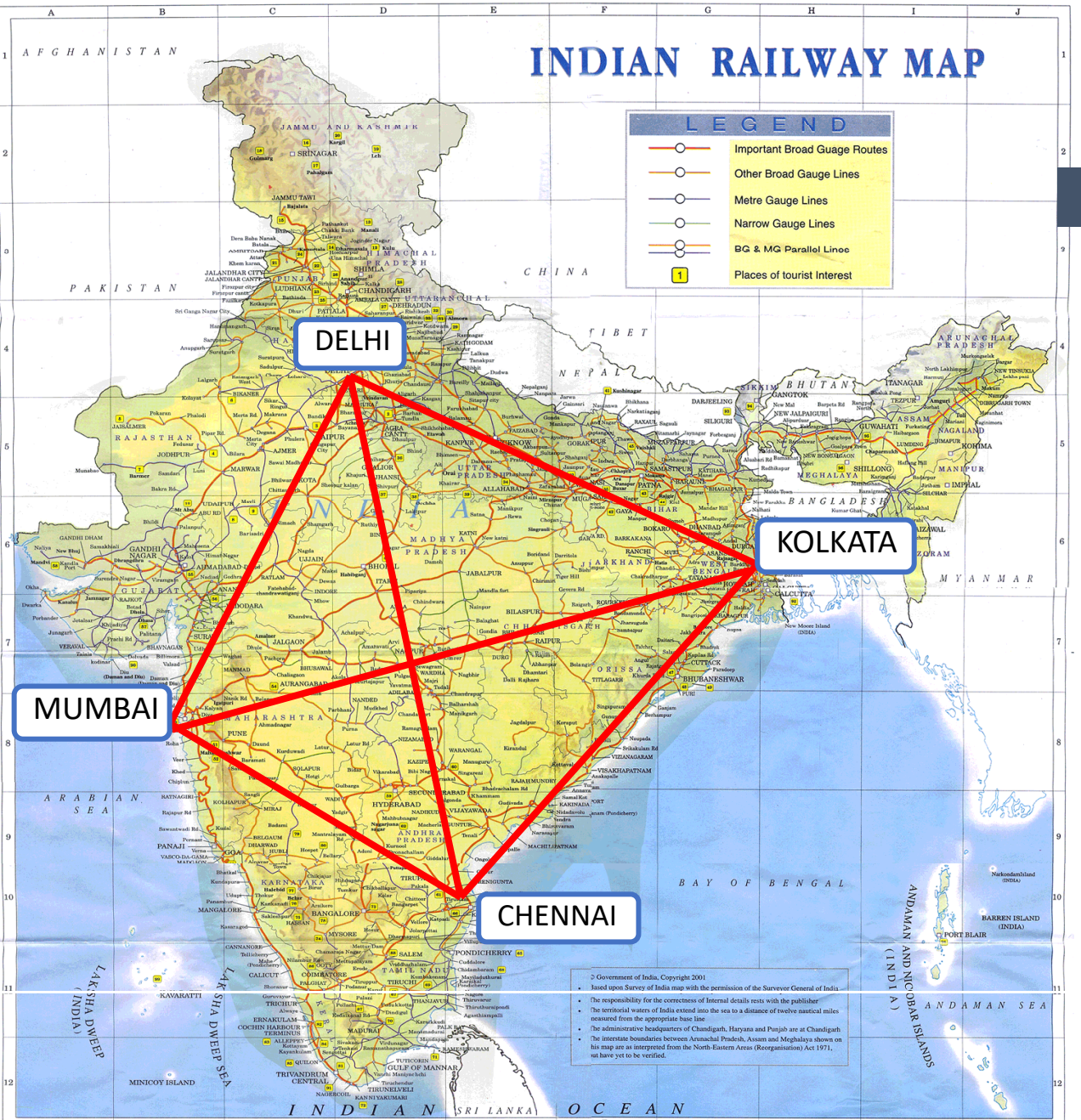
Dedicated Freight Corridor

- Need of DFCs
- Scale of Project
- Transforming Transportation
- Project Status
- Operation & Business Development
- Future Plans
- Association & Opportunities for Railroad Industry

Need for Dedicated Freight Corridors (DFCs)

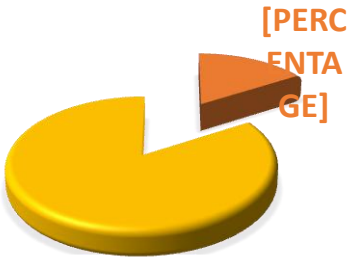
Need for DFCs in India

Dedicated Freight Corridor

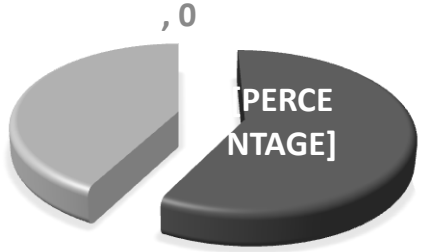


Indian Railway's

Golden Quadrilaterals & Diagonals:



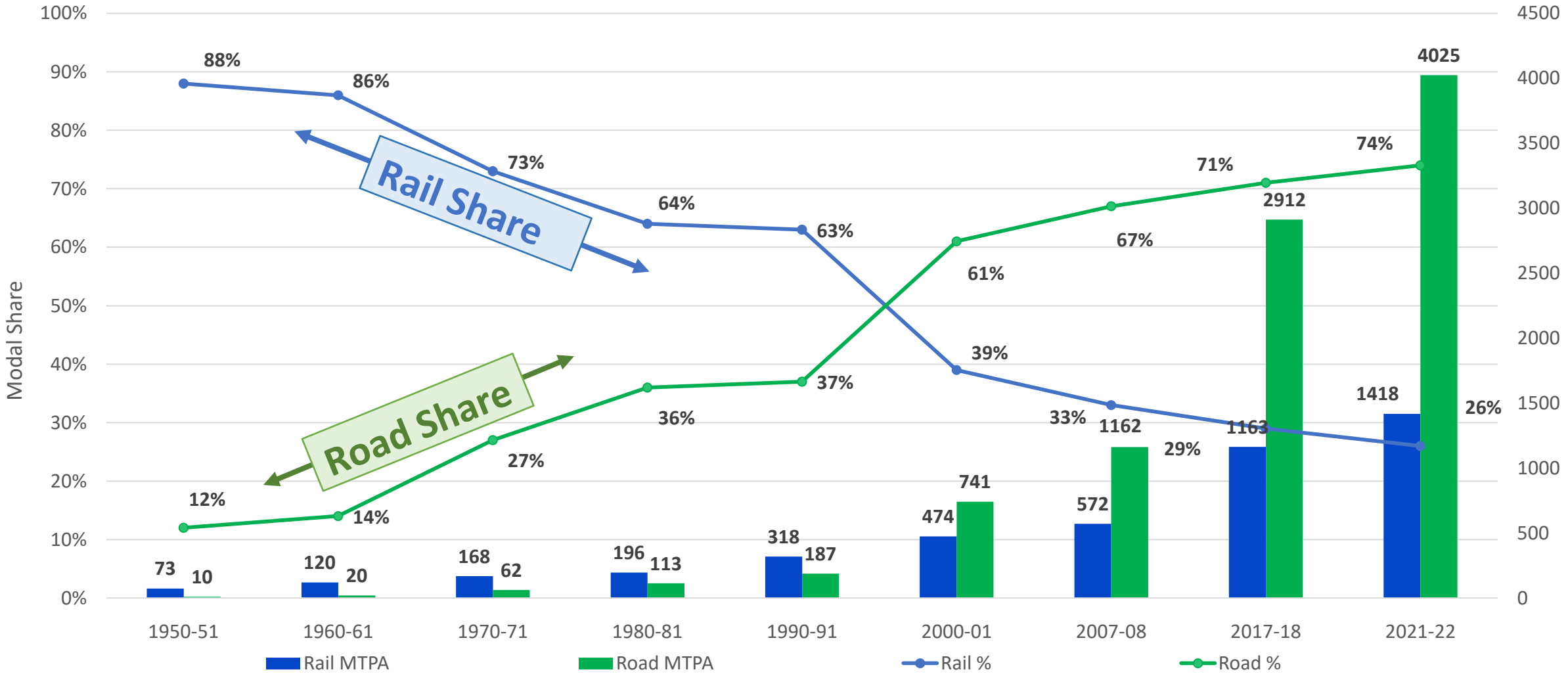
16% Length of Total IR Route KM



Carry 58 % of Total IR Freight Traffic.

Carry 52% of Total IR Passenger Traffic.

Modal Share & Traffic Volumes by Rail & Road



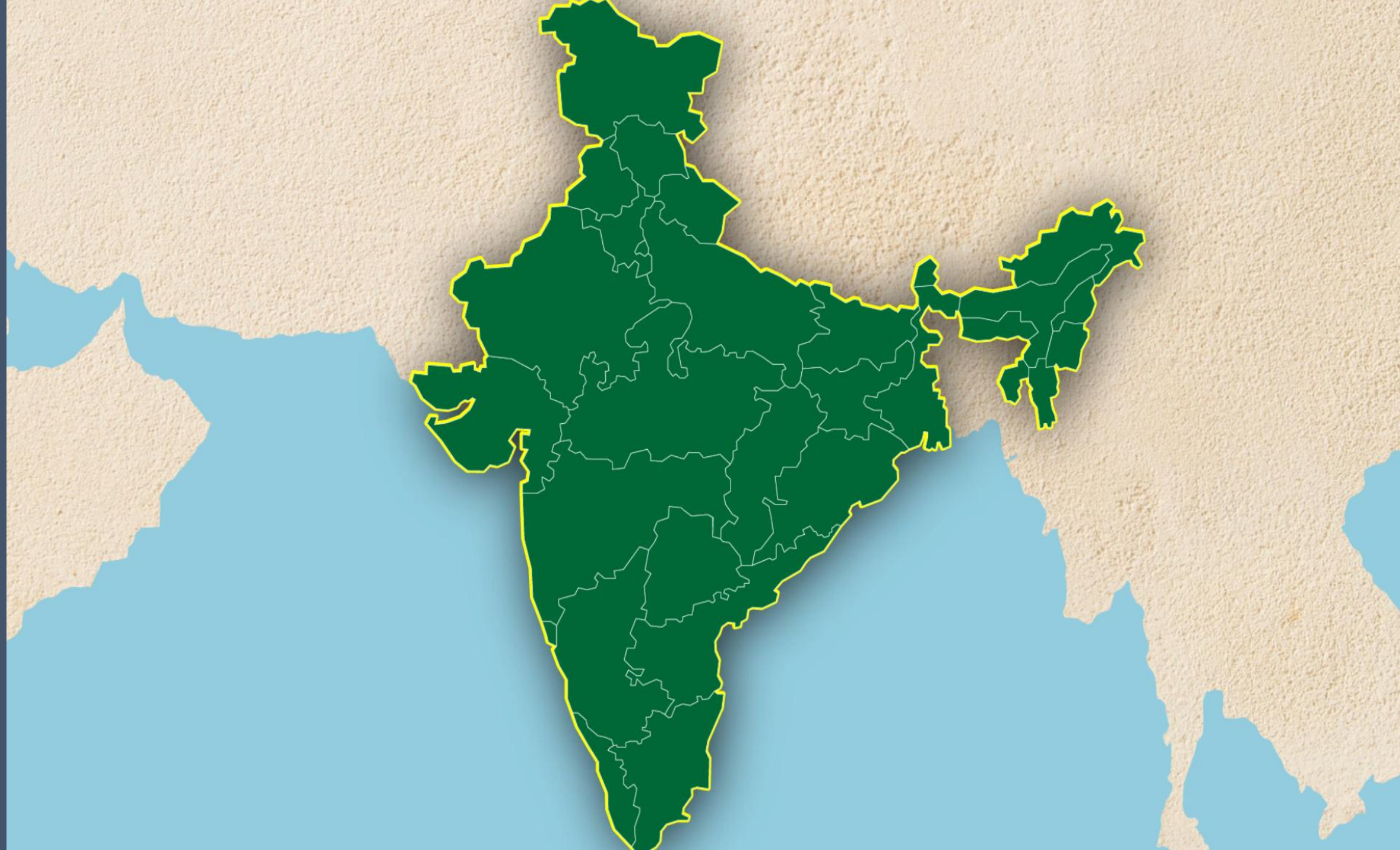
Sources: Infrastructure for Low Carbon Transport in India: A Case Study of the Delhi - Mumbai Dedicated Freight Corridor by Prof. Prem Pangotra & Prof. PR Shukla, IIM Ahmedabad (2012); RITES (2009) National Rail Plan (2019); Indian Railways Year Books & Analysis.

Need For DFC: Prevailing Scenario

- **Huge unmet demand -** both passenger and freight sectors.
- **Congested network-** insufficient to meet the growing demand.
- **Delay i**n completion of capacity expansion works.
- **Financial Constraints-** Less Outlays
- **High operating ratio –** low or no operational surplus.
- **High cost** of operations & maintenance.
- **Declining modal share** in freight.

Scale of Project

Overview



DFCs (3381 km) through 9 States and 72 Districts

Involved Land Acquisition of more than 11000 Ha

Earthwork of more than 250 million cum

Important Bridges - 53 nos

Major Bridges : 543 nos

Minor Bridges : 4643 nos

Rail over Rail Flyovers – 53 nos

DFC towards
Better Road User Safety & Safe Train Movement

861

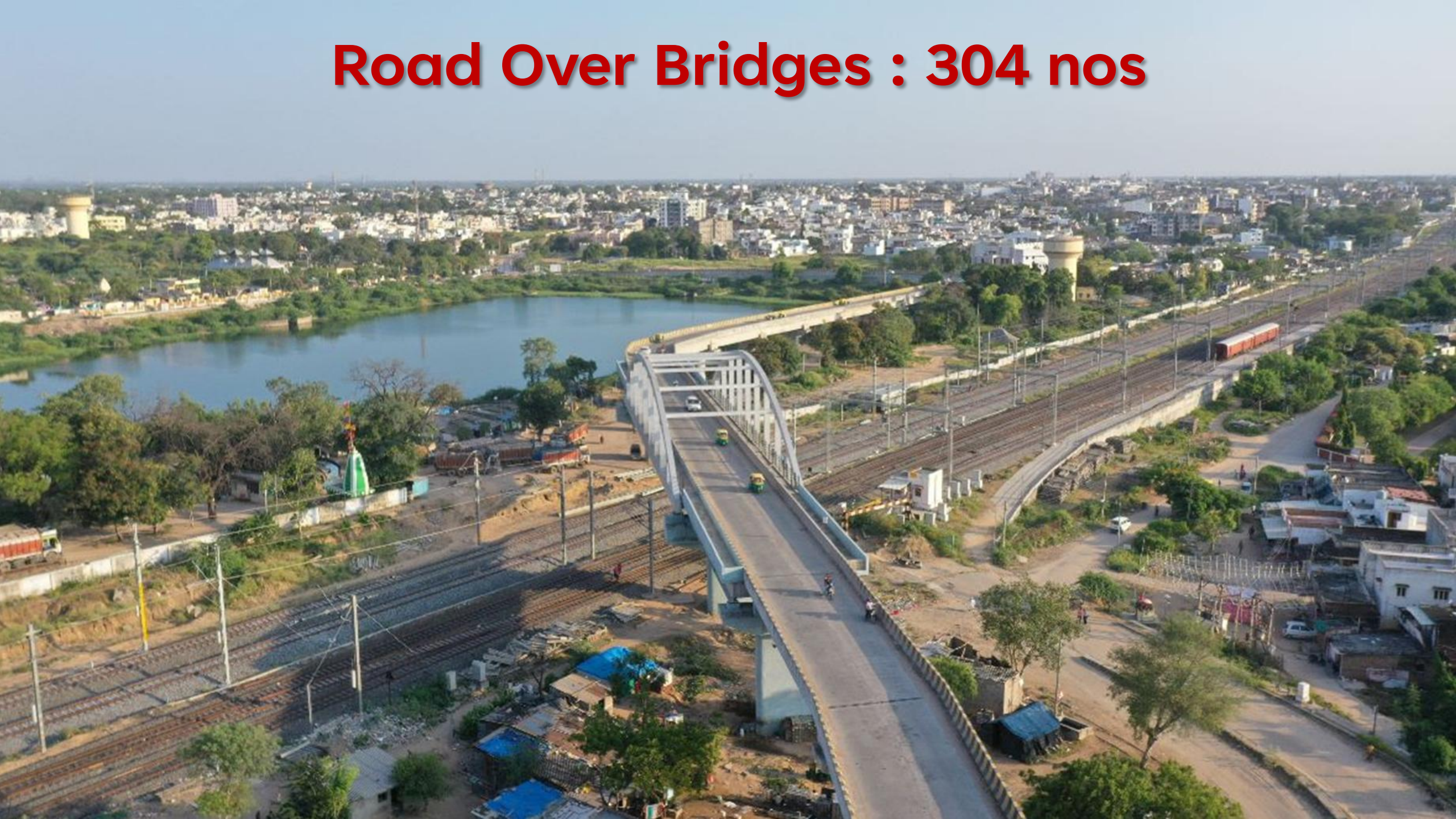
Level Crossings Eliminated

along DFC Newtork with

304 ROBs
Road Over Bridges

557 RUBs
Road Under Bridges

Road Over Bridges : 304 nos



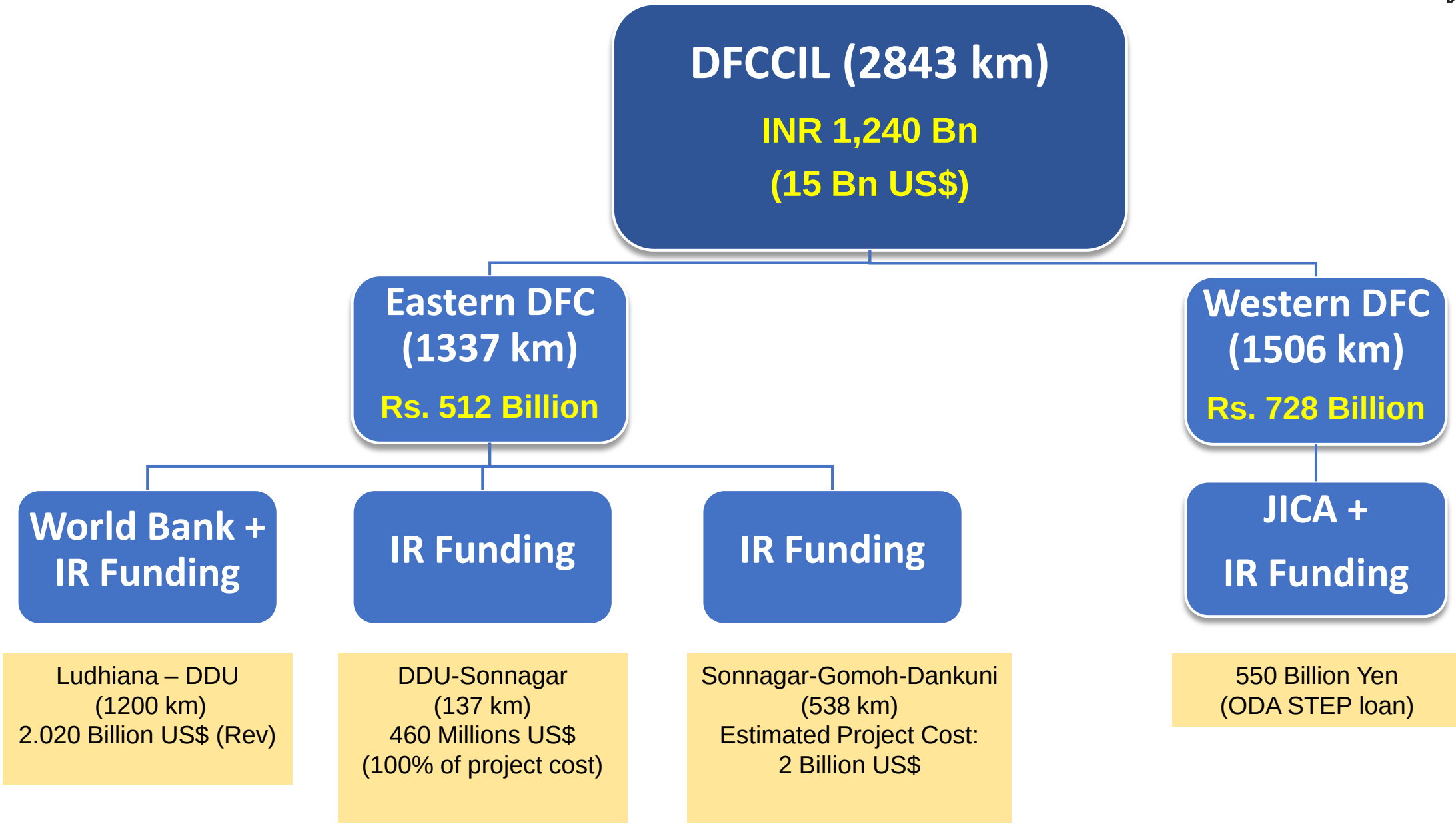

Road Under Bridges : 557 nos

Greenfield Stations : 114 nos

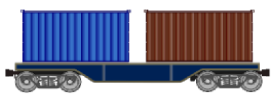
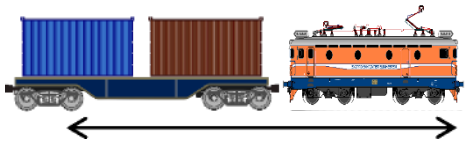
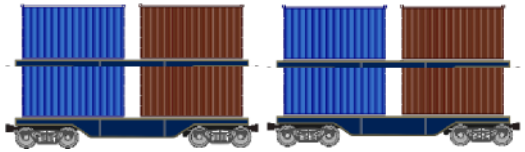
State of the Art- Western DFC Operation Control Center

State of the Art- Eastern DFC Operation Control Center

Funding Arrangements



Basic Design Feature

Moving Dimensions	Indian Railway	Dedicated Freight Corridor
Height (+66%)	4.265 m 	 7.1 m Western Corridor  5.1 m Eastern Corridor
Width (+14%)	 3,200 mm	 3,660 mm Increased track centre distance from **5.3 m to 6 m** in DFC
Train Length (Double)	 700m	 700 / 1,500m
Train Load (>Double)	 5,400 Ton	 12,000 Ton

Basic Design Feature

	Indian Railway	Dedicated Freight Corridor
Axle Load (+30%)	 22.9t	 **25T** (Track Structure) **32.5T** (Bridges & formation)
Track Speed (+33%)	 Predominantly 75 Kmph	 Predominantly 100 Kmph (can be upgraded upto 130 kmph)
Average Speed (+163%)	25 kmph	More than 60 kmph
Gradient (easier)	Upto 1 in 100	Upto 1 in 200
Traction	Electrical (25 KV)	Electrical (2x25 KV)
Signaling	Absolute /Automatic with 1 Km spacing	Automatic with 2 Km spacing in Automatic territory

Basic Design Feature

Station Distance

Rails used

60 kg Rails 1080 HH

Curves

Up to 2.4 degree

Turnouts

Curved thick web switches with speed potential 55 kmph

Continuous welded rails (CWR) jointless through turnouts

Dedicated Freight Corridor

Transforming Transportation

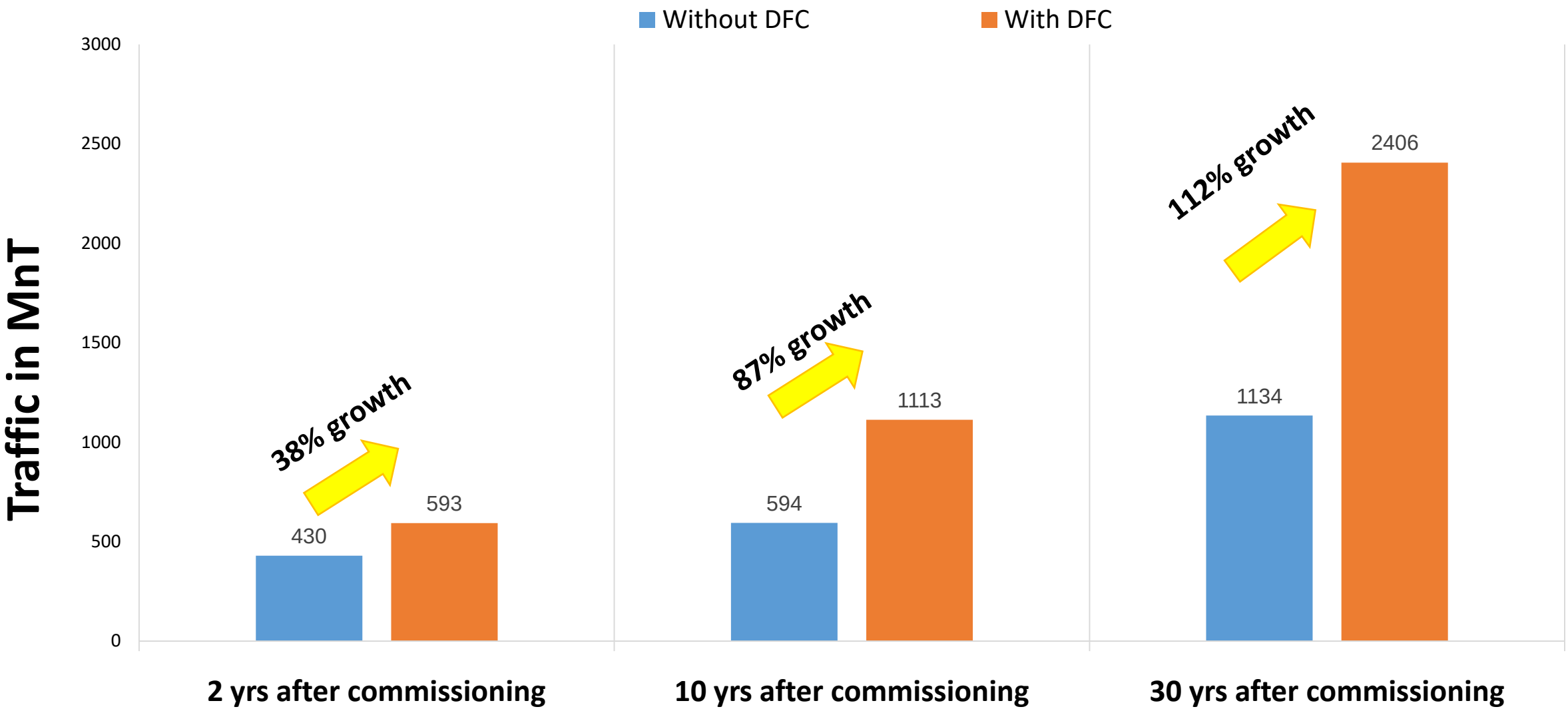
DFC – A Game Changer In Transport Logistics

- **HIGHER CAPACITY: FASTER, HIGHER & LONGER – HEAVY HAUL**
- **QUANTUM JUMP IN TRANSPORTATION CAPACITY: 120 TRAINS EACH WAY**
- **SCHEDULED TIME TABLED TRAINS - STRENGTHENING SUPPLY CHAIN**
- **MISSION 3000 MnT by 2030: INFRASTRUCTURAL CAPACITY AUGMENTATION**

DFC – A Game Changer In Transport Logistics

- **LEVEL CROSSING FREE:**
  IMPROVED ROAD AND RAIL SAFETY
- **SAFE TRAIN OPERATION:**
  PROVISION OF TRAIN PROTECTION WARNING SYSTEM (KAVACH)
- **GREEN RAILWAYS:**
  DFC WILL SAVE 457 MILLION TONNE OF CO2 EMISSION OVER 30 YEARS
- **DEVELOPMENT OF INDUSTRIAL HUBS:**
  INDUSTRIAL CORRIDOR ALONG FREIGHT CORRIDORS. CONNECTION TO INLAND WATERWAYS
- **RELEASED CAPACITY ON IR:**
  AVAILABLE FOR AUGMENTATION AND SPEEDING UP PASSENGER SERVICES

Rail Traffic estimates in DFC Influence Area



Modern Technologies

Latest Construction Technology

New Technology Adoption on DFC

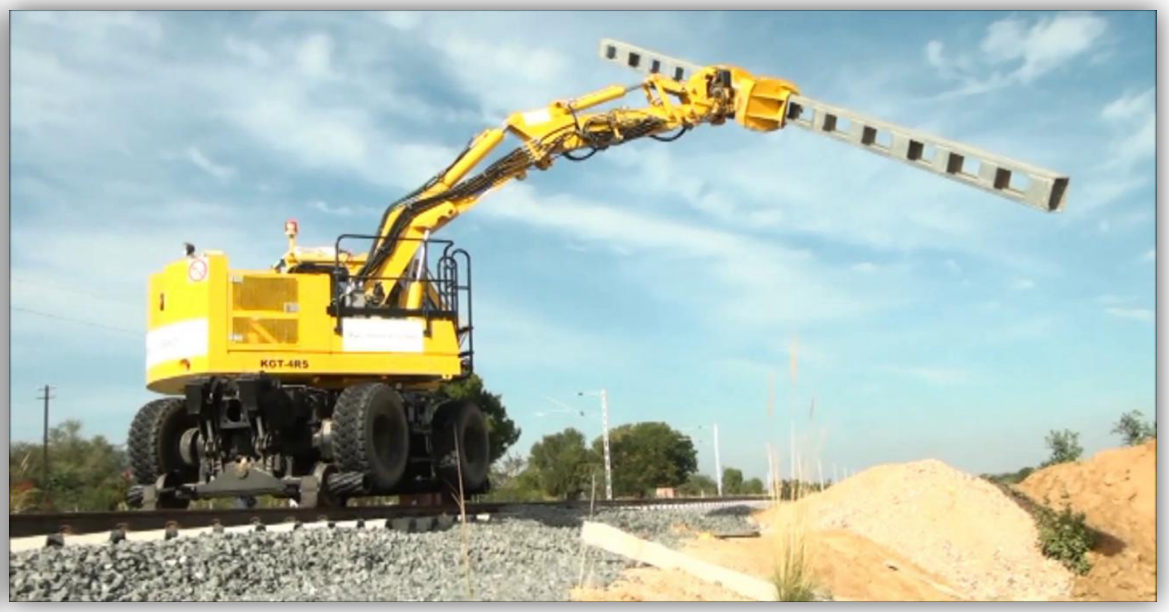
New Track Construction(NTC) Machine

- Surveying & Construction Management
- Infrastructure / Asset Monitoring

Latest Construction Technology

New Technology Adoption on DFC

OHE Foundation using Mechanized Auger



OHE Erection using Mast Grabber

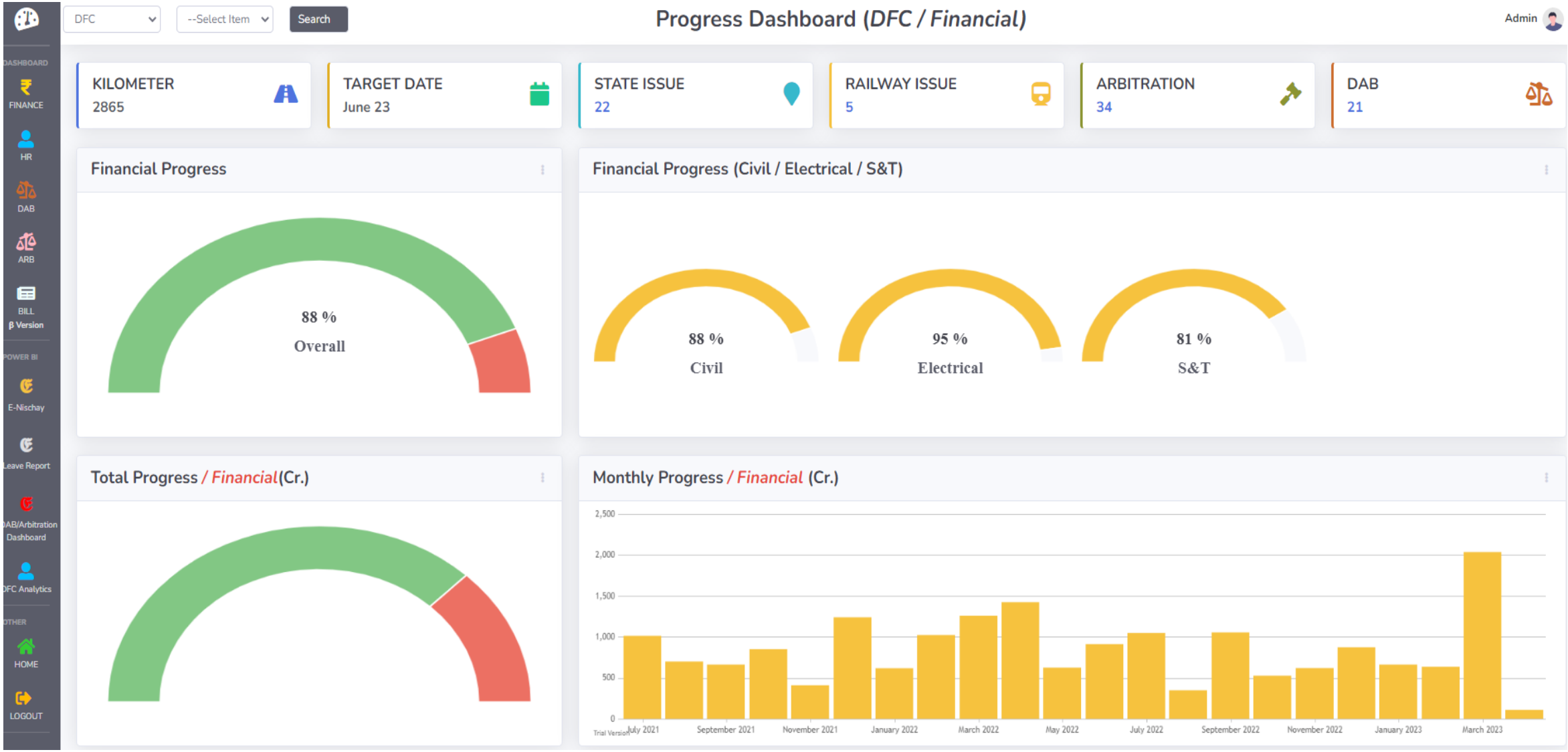
Latest Technology

Automatic signaling with GSM-R Communication

State of the Art Signaling & Telecommunication Systems

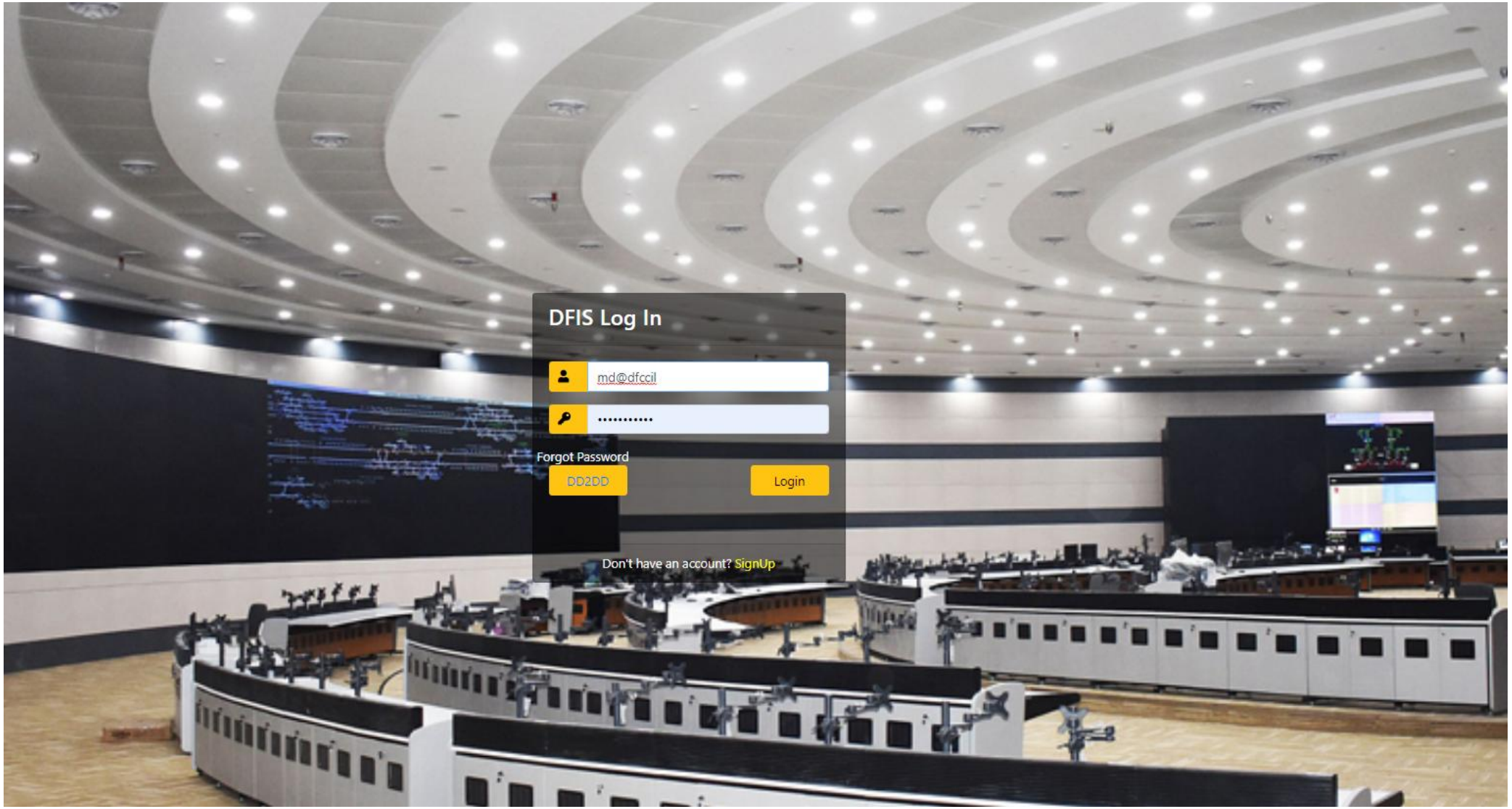
Latest Construction Technology

In house project monitoring Dashboard



Latest Technology

In house comprehensive train operation application : DFIS



Dedicated Freight Information System

DFIS

Search

Dashboard2

- OP Modules
- Crew Management Module
- MIS Reports & Dashboards
- Station Management
- Messaging Management System
- Mechanical
- Security
- D-SIMS
- Commercial Information System
- Disaster Management
- Block Management System
- Leave Management System
- Cadre Management System
- Important Links
- UIMS
- Business Analytics Team
- SMART
- Civil

Interchange|Y-Day|Today

397	193
EDFC FTO: 0	EDFC FTO: 0
EDFC TO: 117	EDFC TO: 49
EDFC MO: 116	EDFC MO: 59
WDFC FTO: 66	WDFC FTO: 72
WDFC TO: 82	WDFC TO: 39
WDFC MO: 82	WDFC MO: 46

Show Live

EDFC Trains
WDFC Trains
EDFC Chart
WDFC Chart

Speed |Y-Day|Today

EDFC: 35.41 EDFC: 36.16
WDFC: 34.85 WDFC: 42.31

Detention

Unit-wise: Detention

GTKm|Y-Day|Today(mnT)

EDFC: 117.64 EDFC: 52.26
WDFC: 77.42 WDFC: 55.5

Loading| Tonnage

Y-Day(04-05-2023) : 38930.15
Last Month(04-04-2023) : 44744.70
Last Year(04-05-2022) : 508.05

Earning| *Lakh

Y-Day(04-05-2023) : 283.40
Last Month(04-04-2023) : 348.33
Last Year(04-05-2022) : 7.12

SM|Crew(LP)|Duty hrs

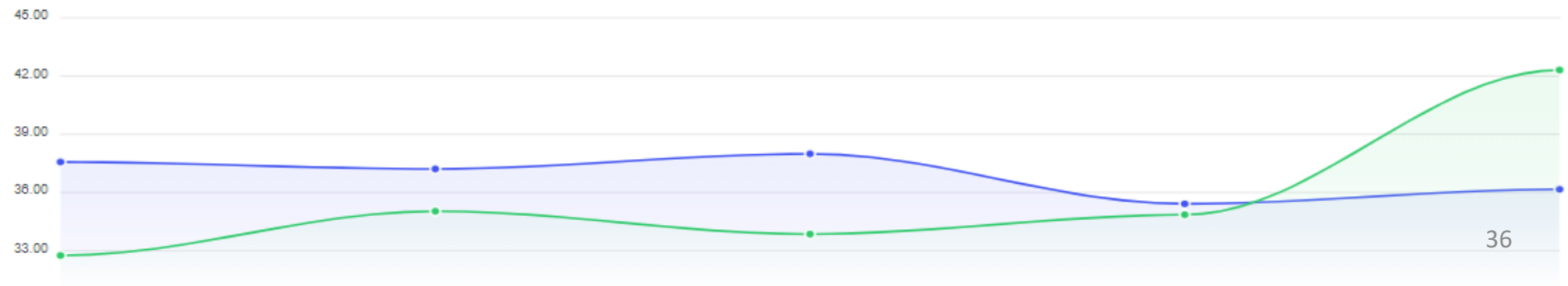
SM(>8):2
SM(>12):1

WDFC	EDFC
UP(>8):	UP(>8):
DN(>8):	DN(>8):
UP(>12):	UP(>12):
DN(>12):	DN(>12):

Section Availability

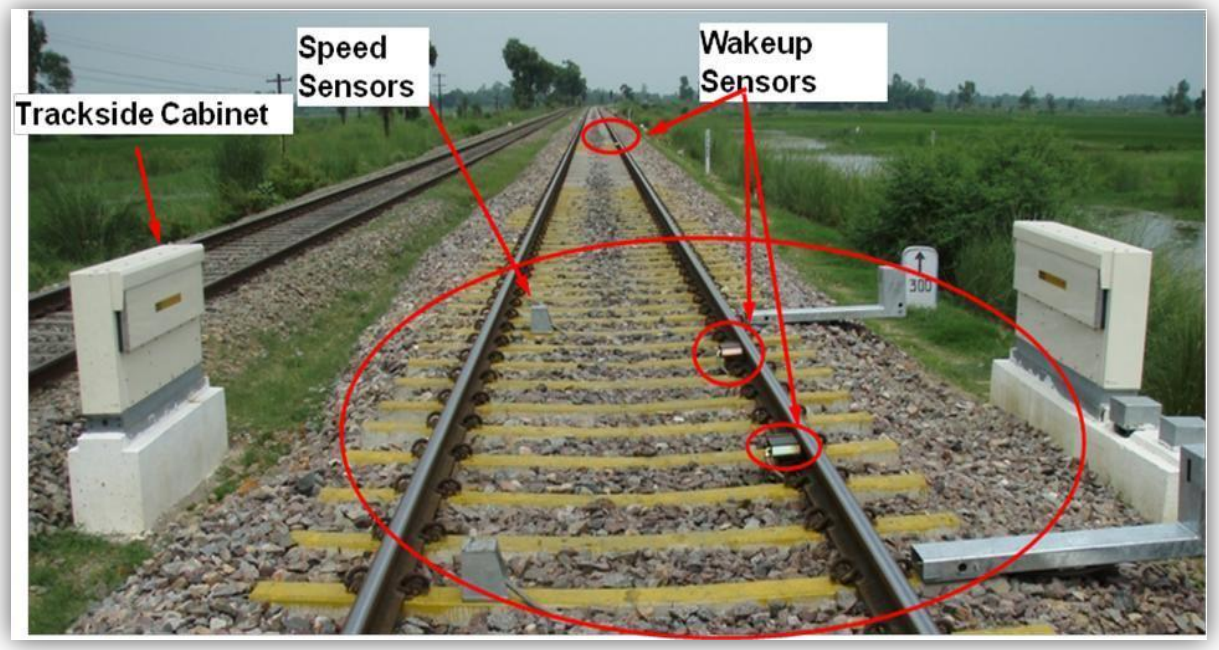
EDFC: EDFC-Section Availability
WDFC: WDFC-Section Availability

Speed /This Week



Latest Technology

Enroute inspection of rolling stock –MVIS, WILD, OMRS & HABD



Wayside Inspection Equipment

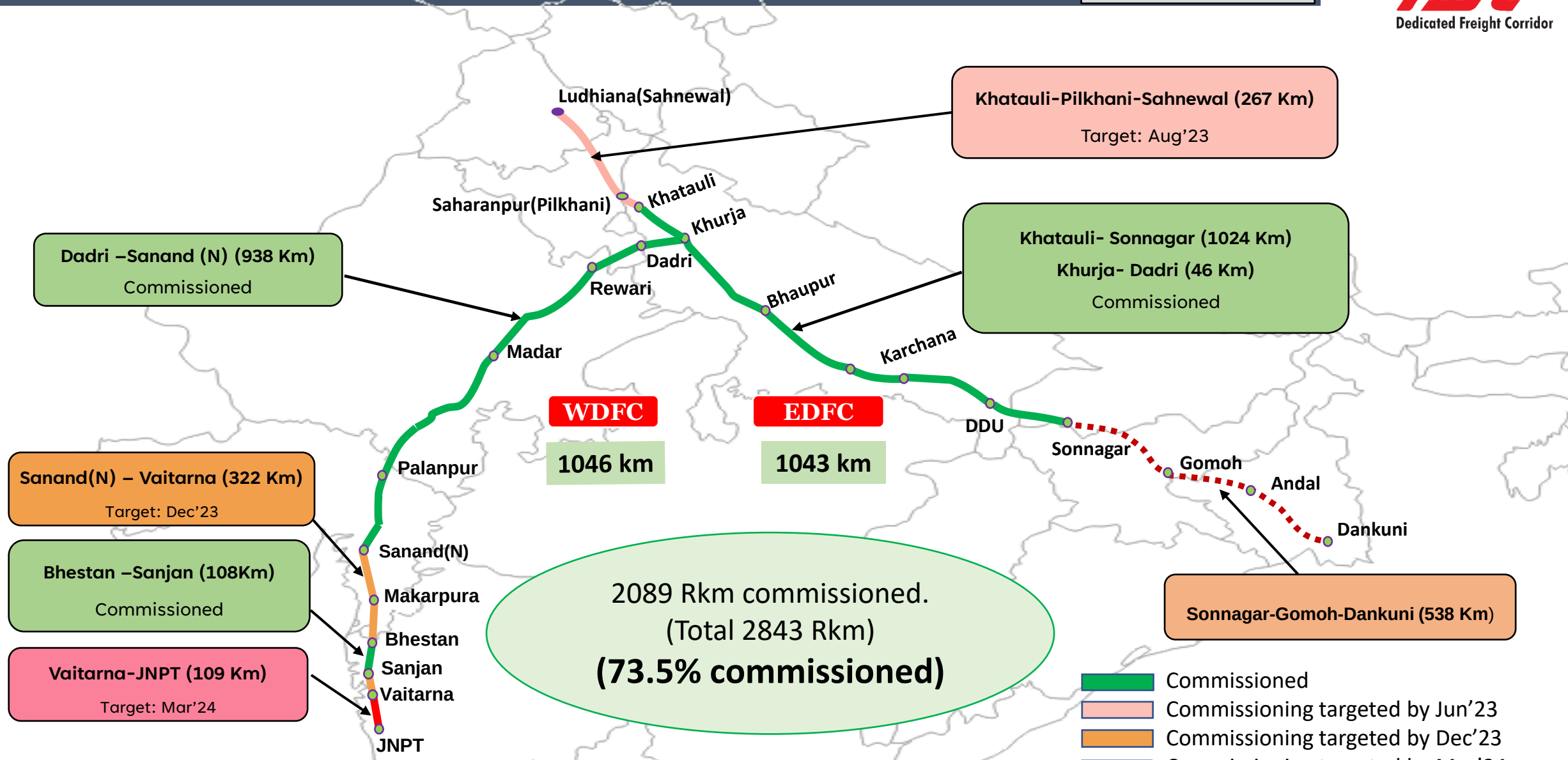
Machine Vision Inspection System

Project Status

Project Status – DFC (2843 km +538 km)

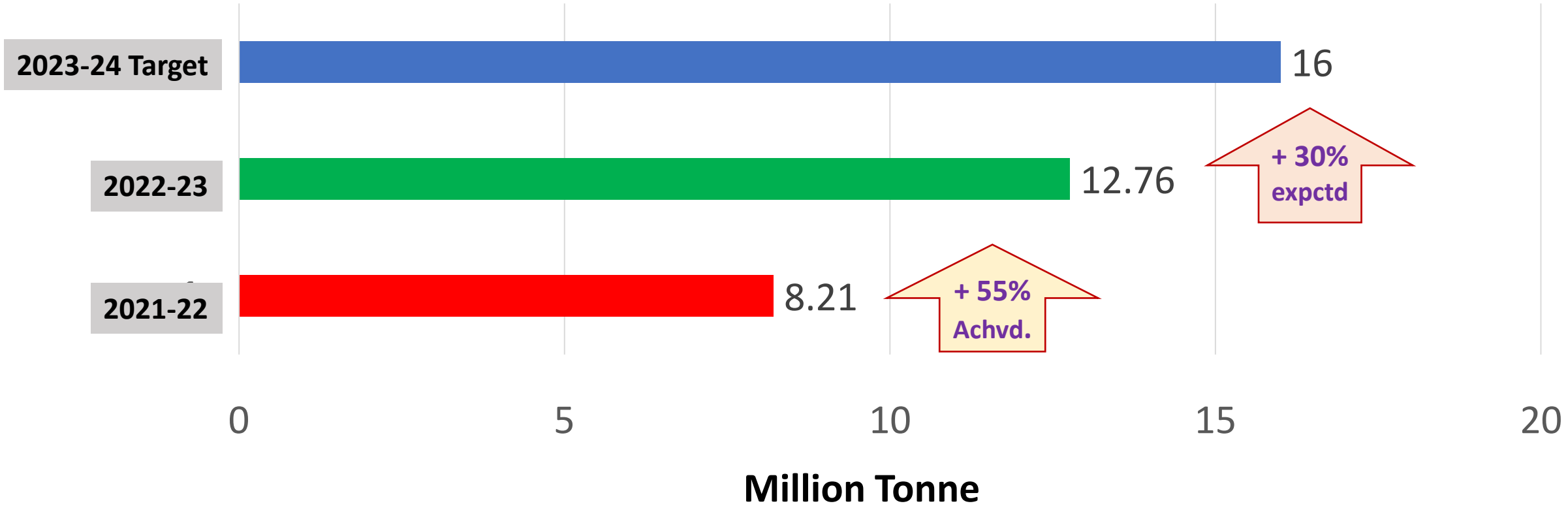
As on 02.05.2023

Dedicated Freight Corridor



Operations & Business Development

Total Loading : Tonnage & Earnings



Earning figures excluding GST

Innovative Freight Services

Truck on Train Services

Double Stack Container Trains

Benefits accrued to IR from DFC Commissioning

Dedicated Freight Corridor

- ✓ **Average speed of 55 - 65 kmph on DFC,**
  - Higher than IR (15-23 kmph pre DFC, 32-34 kmph after DFC comm.)

- ✓ **Trains per day on IR increased by 25-30%**

- ✓ **High loco utilization on DFC: 700-800 km**
  - Higher than IR (300-400 km)

- ✓ **Savings of 50-60 crew sets everyday**

- ✓ **Increase in Double stack trains**
  - 29 trains per day (19 trains pre DFC).

- ✓ **Increase in loading due to faster connectivity**
  - 30 – 60% growth (Laxmi Cement, Ultratech , container terminals)

Benefits accrued to I from DFC Commissioning

Dedicated Freight Corridor

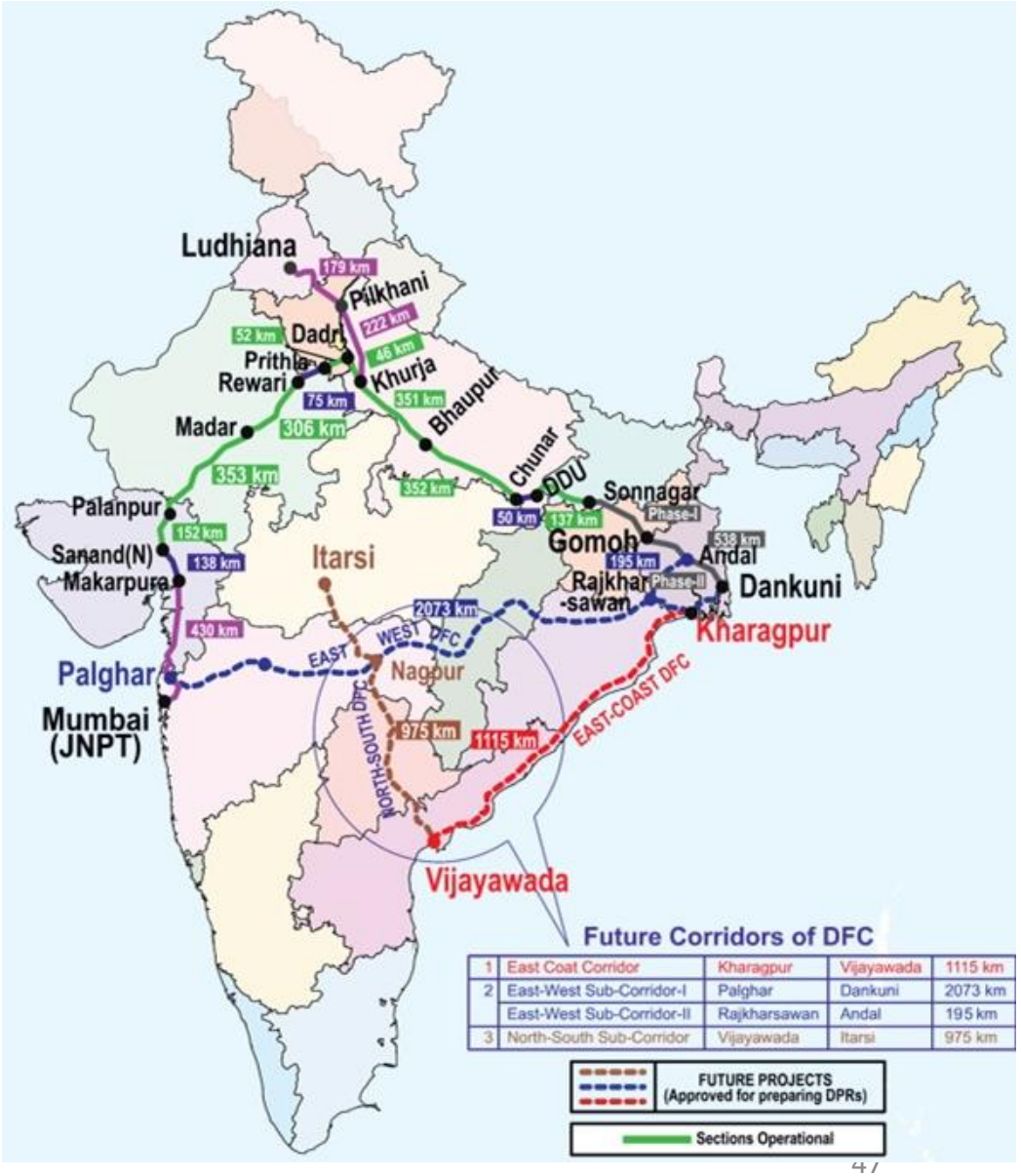
- ✓ **New Terminals notifications**
- ✓ **Reliability of service**
- ✓ **Enhanced Customer experience**
  - IT enabled accessibility to Cargo track and trace
- ✓ **Adoption of Section Availability System**
  - Minimum 20 hours availability
- ✓ **Improvement in Passenger Segment of Indian Railway**
  - Punctuality improved considerably

Future Plans

Status of Survey/DPRs for New DFCs

SN	Corridor	Section	Length	DPR
1	East Coast	Kharagpur-Vijaywada (Tenali)	1078 km	May'23
2	East west	Palghar-Bhusawal-Dankuni	2106 km	Dec'23
		Rajkharswan-Andal	200 km	
3	North-South	Itarasi- Vijaywada	931 km	May'23
	TOTAL		**4315 km**	

- Identification of traffic potential and traffic nodes done
- Procurement of satellite imagery completed
- LiDAR Survey completed

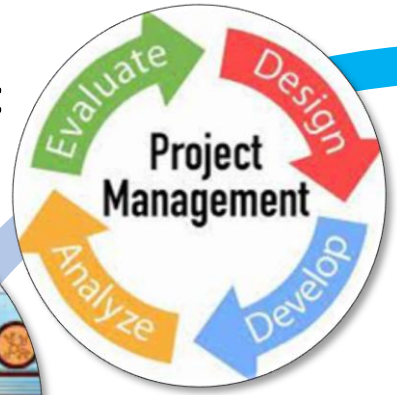


Opportunities for Railroad Industry

Opportunities for Railway Industry

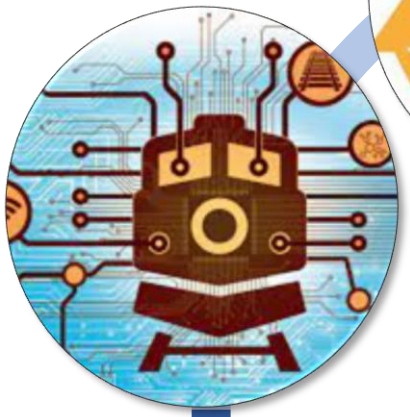
Dedicated Freight Corridor

Project Management Consultancy



Inspection & Monitoring of **DFC tracks**

Innovation in Railways using **AI & Industry 4.0**



DFCCIL

Asset Maintenance/ Asset life Improvement

Signal & OHE Diagnostic and Monitoring systems

Bridge Monitoring systems

Next generation track machines for mechanized track maintenance

Thank You